

ABSTRACT OF THE DISCLOSURE

A projection optical system that projects an image on a first side onto a second plane through a plurality of lenses includes the following elements in order from the first side to the second plane: a first lens group that has a negative refractive power, a second lens group that has a positive refractive power, a third lens group that has a negative refractive power, a fourth lens group that has an aperture stop in the optical path, and a fifth lens group that has a positive refractive power. A clear aperture of a lens surface or an outer diameter of a lens in the projection optical system has a relative maximum in the second lens group, a relative minimum in the third lens group, and a relative maximum in the third-fifth lens groups, and has only one significant minimum between the first side and the second plane.

[illegible]